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Near-infrared photometry and astrometry of Neptune's inner satellites and ring-arcs

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Until recently, the system of Neptune's inner satellites and ring-arcs had only been observed in direct imaging by the Voyager~2 spacecraft, limiting our knowledge of this system to visible wavelengths data. Nearly ten years after the Voyager fly-by, HST/NICMOS observed the close vicinity of Neptune at 1.87\mum, a wavelength that corresponds to a strong methane absorption in the atmosphere of Neptune and allows to attenuate the scattered light produced by the planet. We derived the near-infrared geometric albedo of the ring-arcs and small moons Proteus, Larissa, Galatea and Despina, and compared their orbital positions with the predictions from the 1989 *in-situ* observations. The surface of the inner satellites of Neptune appears to be coated with dark, neutral material, with albedoes ranging from 0.077 (Proteus) to 0.033 (Despina) and their orbital position was found to be within the prediction errors of the Voyager measurements. The material inside the ring-arcs of Neptune displays also a low-neutral reflectance ($p_{1.87 \mu m}$ ~0.055) and the HST/NICMOS measurement of the ring-arcs mean orbital motio shows that their confinement cannot be entirely explained by resonances produced by the nearby satellite Galatea (Nature, **400**, 733-735).

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